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A NEW SPECIES OF ROCK SHRIMP OF THE GENUS *SICYONIA* (PENAEOIDEA), WITH A KEY TO THE WESTERN ATLANTIC SPECIES

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Abstract.—*Sicyonia olgae,* new species, ranges from Dry Tortugas Is., Florida, to Suriname. It differs from *Sicyonia typica* (Boeck, 1864), its closest western Atlantic relatives, in possessing sublateral carinae on the carapace, and in lacking posterior pleural sulci on the first three abdominal somites; also, distinctive are the sharply pointed, mesially directed, distomesial projection of the petasma in the male, and in the female the pair of long, slender spines on sternite XI and rounded posterolateral processes of the median plate of sternite XIII. A key to the western Atlantic species of *Sicyonia* is supplemented by synopses of their geographic and depth ranges which include many extensions of previously known limits.

The shrimp genus *Sicyonia* was previously known to be represented by eight species in the western Atlantic, but an examination of the collections of these shrimps in the National Museum of Natural History, Smithsonian Institution (USNM), brought to light a ninth species here described as new.

Some of those *Sicyonia* are present in relatively large quantities in commercial catches of shrimps of the genus *Penaeus,* and one, *S. brevirostris* Stimpson, 1871, is large and abundant enough to sustain a fishery which rendered about 3,700,000 lbs (heads-off weight) in 1979.[1] Although the collections examined are rather extensive, the number of available specimens of the new species is limited; thus additional material may demonstrate variations in some of the characters treated.

Sicyonia olgae has the broadest bathymetric range—from 33 to 622 m—of any of its western Atlantic congeners. The species of *Sicyonia* typically occur in shallow water, but the range of many of them, like that of the new species, extends across the continental shelf onto the slope, to depths of a few hundred meters. Such pattern of bathymetric distribution is not uncommon among penaeoidean shrimps; for example, certain species of *Metapenaeopsis* have been recorded from less than 20 to more than 300 m, and *Parapenaeus longirostris* (Lucas, 1846), a species commercially exploited

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[1] Data provided by Roger W. Hutchinson, Natl. Mar. Fish. Serv., Fish. Develp. Div., U.S. Dept. of Commer., NOAA.

in the Mediterranean and eastern Atlantic, ranges from less than 20 m to at least 700.

Because two new species of the genus *Sicyonia* have been discovered since the appearance of the most recent key to the western Atlantic species of the genus (Chace, 1972[2]), a modified version of it is presented below. A study of extensive collections of *Sicyonia* from that region shows that the geographic and depth ranges of many species are considerably greater than was previously realized. Synopses of geographic and bathymetric ranges are included after the key.

The occurrence of *S. brevirostris* in the eastern Pacific is cited under "Geographic and bathymetric ranges. . . ." with hesitation. The only record of its presence outside the western Atlantic is that of Burkenroad (1934) who reported a single juvenile specimen from off the Pacific coast of southern Mexico (off Tapachula, Chiapas). I have examined this specimen, and agree with his determination. However, because *S. brevirostris* has not been reported again from the region, nor have I found any representatives among the many hundred specimens of *Sicyonia* I have examined from the Pacific coast of America (including large collections from Mexican waters), its occurrence there needs to be confirmed.

The terminology employed in describing the external genitalia, and transverse sulci on the pleonic pleura is that proposed by Kubo (1949) and Burkenroad (1934), respectively, the former slightly modified by Pérez Farfante (1969). The length of the carapace was measured from the orbital margin to the midposterior margin, and the total length, from the apex of the rostrum to the posterior end of the telson. The scales accompanying the illustrations are in millimeters.

Key to the Western Atlantic Species of *Sicyonia*

1. Antennal spine absent or occasionally exceedingly weak; second abdominal somite with narrow notch or perpendicular incision in anterior half of dorsal carina; first pereopod with short distal spine on basis and ischium **2**
– Antennal spine well developed or clearly distinct; second abdominal somite with dorsal carina entire, not incised; first pereopod with basis and ischium unarmed **3**
2. Postrostral carina armed with 3 unequal teeth, anterior one smallest; first abdominal somite with 1 well marked vertical (posteromedian)

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[2] A later key by Huff and Cobb (1979) is restricted to the Gulf of Mexico and the Atlantic coast of Florida.

sulcus and sometimes with 1 short, barely distinct more anterior one (anteromedian) on pleuron ..... *S. laevigata* Stimpson, 1871[3]

– Postrostral carina armed with 3 subequal teeth; first abdominal somite with 3 vertical sulci on pleuron, posterior one (posterior pleural) less conspicuous ..... *S. parri* (Burkenroad, 1934)

3. Postrostral carina bearing 2 or 3 large teeth posterior to level of hepatic spine **4**

– Postrostral carina bearing 1 large tooth posterior to level of hepatic spine **6**

4. Postrostral carina with 3 large teeth posterior to level of hepatic spine ..... *S. brevirostris* Stimpson, 1871

– Postrostral carina with 2 large teeth posterior to level of hepatic spine **5**

5. Rostrum armed with 1 or 2 teeth (excluding tip) anterior to orbital margin; first abdominal somite with 3 vertical sulci on pleuron .... *S. typica* (Boeck, 1864)

– Rostrum armed with 3 or 4 teeth (excluding tip) anterior to orbital margin; first abdominal somite with 2 vertical sulci on pleuron (posterior one lacking) ..... *S. olgae,* n. sp.

6. First abdominal somite with tooth at anterior end of dorsal carina bifurcate; fifth abdominal somite without tooth or sharp angle at posterior end of dorsal carina ..... *S. wheeleri* Gurney, 1943

– First abdominal somite with tooth at anterior end of dorsal carina not bifurcate; fifth abdominal somite with tooth or sharp angle at posterior end of dorsal carina **7**

7. First abdominal somite with anteroventral margin of pleuron concave or straight; fourth abdominal somite with posteroventral margin of pleura angular or with posteriorly oriented spine; fourth and fifth abdominal somites with long acute spine on either side of midline of posterodorsal margin ..... *S. dorsalis* Kingsley, 1878

– First abdominal somite with anteroventral margin of pleuron slightly or strongly convex; fourth abdominal somite with posteroventral margin of pleura rounded; fourth and fifth abdominal somites with short, obtuse projection on either side of midline of posterodorsal margin **8**

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[3] The number of rostral teeth which has been widely used to distinguish *S. laevigata* from *S. parri* is omitted here because both possess 3, contrary to previous statements that *S. laevigata* bears only 2. In the young and many adults of the latter the third tooth is placed so far anteriorly that it appears to constitute a part of the tip dentition; the apical dentition consists of 1 to 3 minute teeth in addition to a ventral one that usually becomes situated farther posteriorly with increasing size of the shrimp.

8. First four abdominal somites with anteroventral angle of pleura lacking laterodorsally curved spine (small, ventrally directed obtuse spine occasionally present); last two abdominal somites with well-defined tooth at posterior end of dorsal carina ..... *S. stimpsoni* Bouvier, 1905
– First four abdominal somites with anteroventral angle of pleura bearing laterodorsally curved, acute spine; last three abdominal somites with well-defined tooth at posterior end of dorsal carina. ..... *S. burkenroadi* Cobb, 1971

Geographic and Bathymetric Ranges of Western Atlantic Species of *Sicyonia*

Sicyonia brevirostris Stimpson, 1871. Off Norfolk, Virginia, through the Bahamas to southern Cuba, around the Gulf of Mexico to southern Texas, and from Bahía de Campeche to northeast Yucatan (it has not been recorded from the east coast of Mexico); a single specimen from off Chiapas (Pacific coast), Mexico. Shallow water to 350 m.

Sicyonia burkenroadi Cobb, 1971. Cape Lookout, North Carolina, southward through the Gulf of Mexico and the Caribbean to Ilha Itaparica, Bahia, Brazil. Depth 29 to 585 m.

Sicyonia dorsalis Kingsley, 1878. Cape Hatteras, North Carolina, southward through the Gulf of Mexico, and along the Caribbean coast of Central and South America to Enseada de Tijucas, Santa Catarina, Brazil (records from the West Indies are in need of confirmation). Depth 3 to 420 m.

Sicyonia laevigata Stimpson, 1871. Cape Hatteras, North Carolina, to Biscayne Bay; along west and northwest Florida; Yucatan; and from the Bahamas, through the Caribbean southward to Anse de Zimbros, Santa Catarina, Brazil; also along the Pacific coast of Panama. Shallow water to at least 100 m.

Sicyonia olgae, n. sp. Dry Tortugas Is., Florida, through the Antilles to Suriname. Depth 33 to 622 m.

Sicyonia parri (Burkenroad, 1934). Beaufort, North Carolina, through the West Indies and southward to Ponta do Corumbaú, Brazil (it is not known to occur on the continental shelf of the Caribbean). Shallow water to 37 m.

Sicyonia stimpsoni Bouvier, 1905. Cape Hatteras, North Carolina, to the Straits of Florida; eastern Gulf of Mexico; and from the Bahamas through the Caribbean to Suriname. Depth 20 to 420 m.

Sicyonia typica (Boeck, 1864). Off Wrightsville Beach, North Carolina, southward through the Gulf of Mexico and Caribbean (Antilles, Central America and South America) and along the Atlantic coast of South America to SE of Ilha de Santa Catarina, Santa Catarina, Brazil. [Record from Beau-

fort, North Carolina (Hay and Shore, 1918) actually refers to *S. brevirostris* (Burkenroad, 1934:92)]. Shallow water to 101 m.

Sicyonia wheeleri Gurney, 1943. Bermudas and Virgin Is. to Sint Eustatius, Lesser Antilles. Depth 2 to 42 m.

Sicyonia olgae, new species
Figures 1–3

Material.—Holotype: ♀, USNM 173666, 12 mm carapace length, about 44 mm total length; type-locality: off Paramaribo, Suriname, 06°37′N, 55°36′W, 35 m, 3 September 1958, *Oregon* stn 2277.

Paratypes: 1 ♀, USNM 173667, off Dry Tortugas Is., Florida, 33–37 m, 16 August 1933, J. W. Mills. 2 ♂, USNM 173668, off Punta Las Tunas, Puerto Rico, 18°31′N, 66°47′W, 70 m, 8 October 1959, *Oregon* stn 2668. 1 ♀, USNM 173669, NE Islas Los Testigos, Venezuela, 11°40′N, 62°33′W, 585–622 m, 24 September 1964, *Oregon* stn 5039. 1 ♂ 1 ♀, USNM 103513, NE of Georgetown, Guyana, 07°40′N, 57°34′W, 55–49 m, 31 August 1958, *Oregon* stn 2249.

Description—Body robust (Fig. 1). Rostrum horizontal, surpassing eye, reaching or slightly overreaching distal margin of first antennular article, its length 0.3 to 0.4 that of carapace, armed with 3 or 4 teeth decreasing in size anteriorly, and with tip bifid or trifid. Carapace with closely set fine setae dorsally and patches of setae laterally. High postrostral carina bearing 3 or 4 teeth (if 4, rostrum with 3, total number of rostral plus carapace teeth not exceeding 7); 2 behind hepatic spine, anteriormost located slightly behind orbital margin (if 4 teeth present on carapace, second situated slightly anterior to or at level of hepatic spine); first posthepatic tooth located slightly posterior to midlength of carapace, and posteriormost at about 0.8 carapace length from orbital margin. Adrostral carina, parallel to ventral rostral margin, extending from orbital margin almost to tip of rostrum. Antennal spine small and buttressed; hepatic spine, projecting from swollen hepatic region, straight, directed anteriorly, and longer than antennal. Postocular sulcus short. Hepatic sulcus almost horizontal, relatively deep; branchiocardiac carina horizontal, narrow and rather long, extending from about posterior end of hepatic sulcus to not far from posterior margin of carapace; sublateral carina, sometimes weak, almost parallel to branchiocardiac carina.

Stylocerite with short spine distally, long, about 0.8 distance between proximal end of first antennular article and mesial base of distolateral spine; distolateral spine extending to about midlength of second article; antennular flagella short, mesial one gradually tapering distally, slightly shorter than lateral, length of latter equivalent to that of second and third articles combined.

Fig. 1. *Sicyonia olgae*, holotype 12 mm cl, off Paramaribo, Suriname. Lateral view.

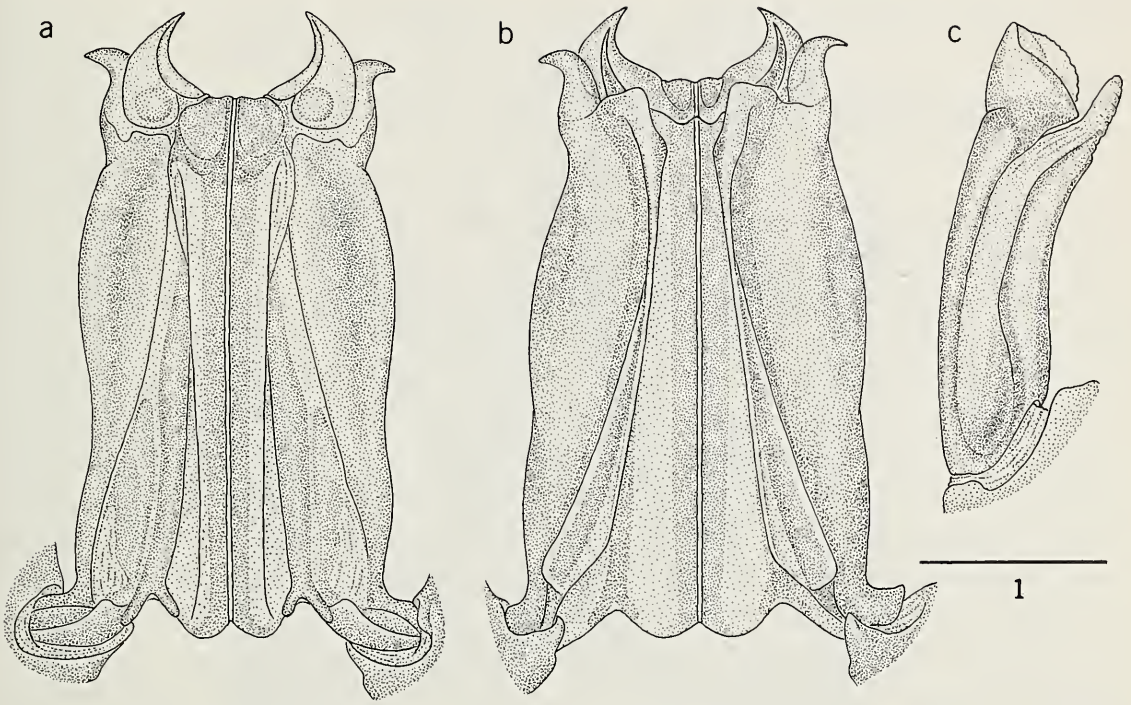

Fig. 2. *Sicyonia olgae,* paratype ♂ 10 mm cl, off Punta Las Tunas, Puerto Rico: **a,** Petasma, dorsal view; **b,** Ventral view of same; **c,** Appendix masculina, dorsolateral view.

Scaphocerite reaching almost to distal end of antennular peduncle; length of antennal flagellum about 2.4 times that of carapace.

Third maxilliped stouter than pereopods, reaching distal end of antennular peduncle or at most exceeding it by dactyl and distal 0.1 of propodus.

First pereopod reaching between proximal and distal ends of middle half of carpocerite. Second pereopod extending to distal end of carpocerite or surpassing it by 0.5 length of dactyl. Third pereopod overreaching antennular peduncle by tip of dactyl or at most by length of propodus, extending only slightly farther than third maxilliped. Fourth pereopod reaching between base and midlength of merocerite. Fifth pereopod extending slightly beyond fourth, at most to basal 0.2 of carpocerite.

Abdomen covered dorsally with fine setae, studded with minute tubercles, densely distributed on anterior 4 somites, bearing dorsomedian carina from first through sixth somites; carina on fifth truncate, ending in abrupt angle, and that on sixth in conspicuous tooth. First somite with anteromedian pleural sulcus (beginning at notch on anterior margin of tergum) joining coalescent posterior tergal and posteromedian sulci ventrally, lacking posterior pleural sulcus. Second and third somites bearing anteromedian and posteromedian pleural sulci and anterior and posterior tergal sulci, lacking posterior pleural sulcus. Fourth and fifth somites with posterior tergal and posteromedian pleural sulci coalescent and continuous with anterior tergal

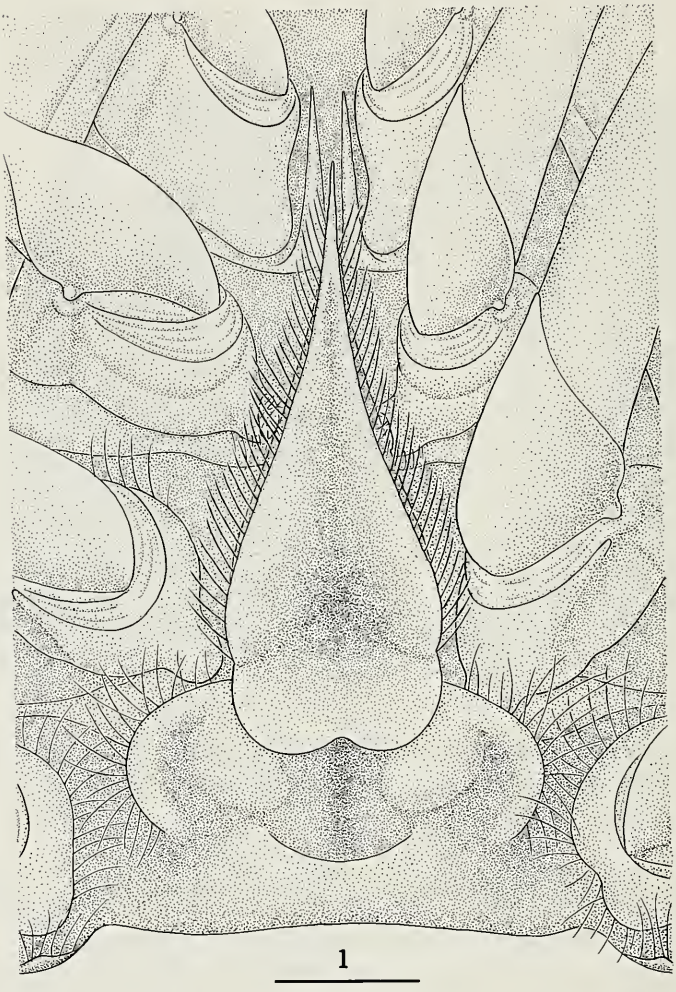

Fig. 3. *Sicyonia olgae*, holotype. Thelycum, ventral view.

sulcus. Sixth somite bearing deep, strongly arched posterior pleural sulcus. Pleura of first 4 somites with anteroventral extremity angular, somites ending in acute tip; fifth and sixth somites rounded anteroventrally. Posteroventral margin of first 3 somites rounded, that of fourth broadly obtuse, and that of fifth and sixth bearing posteriorly directed spine. Telson with short, triangular terminal portion flanked by minute pair of fixed subterminal spines.

Petasma (Fig. 2a–b) with distal part of dorsomedian lobule bearing small, inwardly curved, convex plate. Dorsolateral lobule produced distally in cornified, tear shaped, acutely pointed projection, bearing proximodorsal subhemispherical prominence, and longitudinal ventral groove; dorsolateral lobule forming inconspicuous, rounded proximal process. Ventrolateral lobule heavily cornified, produced distally in fleshy, tapering, laterally directed short projection, with tip sometimes curved proximally; latter projection

situated contiguous to and falling distinctly short of cornified projection of dorsolateral lobule.

Appendix masculina (Fig. 2c), projecting from free distal part of low ridge on dorsomedian margin of endopod, small, roughly campanulate, with ventral wall produced distally beyond dorsal one.

Thelycum (Fig. 3) with plate of sternite XIV forming sharp, rounded lateral flanges and bearing obliquely disposed, oblong bulges separated by broad median depression; latter extending to posterior thoracic ridge. Median plate of sternite XIII triangular in outline anteriorly, tapering into long slender spine reaching about midlength of coxae of second pereopods; plate constricted and deeply excavate at level of coxal plates of fourth pereopods, then continuing posteriorly into short component with rounded posterolateral margins (hiding apertures of seminal receptacles) separated by shallow angular to broadly obtuse median emargination. Posterior thoracic ridge with anteromedian margin concave, and fused laterally with plates of sternite XIV. Paired long, slender spines projecting anteriorly from posterior margin of sternite XI, flanking and extending as far as or beyond spine of median plate of sternite XIII, reaching at least midlength of coxae of second pair of pereopods.

Sizes: males 9–10 mm carapace length, about 36–38 mm total length; females 11–14 mm carapace length, 40–44 total length.

Geographic and bathymetric ranges.—This species has been found in waters off Dry Tortugas Is., Florida, through the Antilles southward to Suriname at depths between about 33 and 622 m. Three of the four available samples were obtained at depths of no more than 70 m. Substrates at each of the four localities were different, consisting of mud, shell, coral, or "specks" respectively.

Affinities: *Sicyonia olgae* is closely allied to the western Atlantic *S. typica* (Boeck, 1864). The two possess a highly vaulted carapace and an elevated postrostral carina armed with 2 teeth posterior to the level of the hepatic spine.

Sicyonia olgae is distinguished from *S. typica* by the following: the armature of the rostrum, consisting of 3 or 4 teeth (not counting tip) instead of only 1 or 2; the presence of a well defined sublateral carina which is lacking or occasionally barely distinct in *S. typica*; the absence of posterior pleural sulci on the first 3 abdominal somites that are always clearly distinct in *S. typica*; the shorter stylocerite, which extends about 0.8 of the distance between the proximal end of the first article of the antennular peduncle and the mesial base of the distolateral spine, but in *S. typica* extends 0.9 the distance, or almost reaches the base of the spine. In females of *S. olgae*, sternite XI is armed with a pair of long, slender spines, that reach at least midlength of the coxae of the second pair of pereopods, and the posterolateral corners of the median plate of sternite XIII are rounded and separated

by a shallow angular or rounded emargination. In contrast, in *S. typica* the spines are small and the posterolateral corners of the median plate of sternite XIII are subrectangular and separated by a deep subrectangular emargination. Also in males of *S. olgae* the dorsolateral lobule of the petasma is produced distally in a sharp, mesially directed projection, whereas in *S. typica* this projection is blunt and twisted—turning mesially and then dorsally.

Etymology: This species is named in honor of my sister Dr. Olga Lanio, who through the years followed with utmost interest my shrimp studies.

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